International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 12 Issue: 12 | Dec 2025 www.irjet.net p-ISSN: 2395-0072

AI CHARMING TOM

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Abstract-*Traditional virtual pet applications require repetitive programming, limited responses, and lack real understanding, which makes user interaction less engaging and often boring. These apps usually depend on simple mimicry and do not provide meaningful conversations or adaptive behavior. Users find it difficult to enjoy long-term interaction because the character cannot think, remember, or respond intelligently. To solve these problems, an AI-powered virtual companion system called **AI Charming Tom** is developed. Users can speak or type anything, and the AI automatically processes the voice, converts it into text, understands the meaning, and generates an intelligent, context-aware reply. The system also includes memory and emotion simulation to make conversations more natural and personalized. This makes the virtual character smarter, more interactive, and more enjoyable for users.*

Key Words: Artificial Intelligence, Intelligent Conversation System, Speech-to-Text Processing, Smart Reply Generation, Virtual Companion, Conversational Memory, Adaptive Interaction.

1. INTRODUCTION

Virtual pet and entertainment applications traditionally rely on pre-programmed responses, simple animations, and basic mimicry, making interactions limited, repetitive, and less meaningful for users. These systems lack real understanding, memory, and adaptability, which reduce engagement over time. Users often expect natural, intelligent conversations, but conventional virtual characters fail to provide context-aware replies or emotional interaction, highlighting the limitations of traditional digital companions.

With the growing demand for smart, conversational, and human-like virtual assistants, artificial intelligence (AI) has begun transforming interactive digital experiences. AI technologies now enable systems to understand speech, interpret user intent, generate meaningful responses, and adapt based on past interactions. This creates more personalized, realistic, and emotionally engaging communication.

The project introduces AI Charming Tom, an AI-powered virtual companion designed to offer intelligent and interactive conversations. Users can speak or type anything, and the system automatically converts speech into text, understands the context, and generates smart, natural responses. It also simulates emotions and stores conversational memory to make interactions more personal and dynamic. This innovative solution enhances engagement, reduces repetitive behavior, and bridges the gap between simple mimicry and true conversational intelligence**.**

1.1 Description

The AI Charming Tom system is an intelligent virtual companion developed using Artificial Intelligence and Machine Learning to provide smart, engaging, and human-like interactions. Its objective is to assist users in having meaningful conversations through an automated and adaptive communication platform. Traditional virtual pet applications rely on fixed responses, simple mimicry, and limited interaction, requiring repetitive manual programming and offering minimal conversational depth. To overcome these limitations, the proposed system delivers an AI-driven solution capable of understanding user input and generating intelligent responses within seconds.

The system allows users to speak or type messages, which are then processed through AI-based algorithms to identify speech patterns, interpret intent, analyze context, and understand user emotion or conversational cues. After processing, it generates accurate, context-aware, and natural replies instead of simple repetitive mimicry. This provides users with dynamic, personalized, and engaging interactions without the need for human intervention.

Developed using Python, the system incorporates Natural Language Processing (NLP), speech recognition, and deep learning models for intent detection, smart response generation, and memory-based conversation management. It also includes a secure authentication module and database support for saving previous chats, user preferences, and character behavior history. By enhancing intelligence, reducing repetitive interactions, and creating an emotionally engaging experience, the AI Charming Tom system offers a smart, efficient, and user-friendly approach to virtual companionship.

1.2 Existing System

Users experience limited interaction, repetitive responses, and lack of intelligent communication because of the constraints in current virtual pet applications.
• Virtual characters work on fixed, pre-programmed responses.
• Interactions are repetitive, predictable, and lack real understanding.
• Existing talking apps provide only mimicry without intelligent replies.
• No real-time conversation, memory, or emotional adaptation for users.
These are the features and limitations of existing platforms.

1.3 Proposed System

An AI powered system transforms interior images into new styles using deep learning and Stable Diffusion model v1.5.

- AI uses deep learning to automatically restyle interior photos.
- Stable Diffusion v1.5 is used to change images in a realistic way.
- Users provide style suggestions and post pictures of their rooms.
- Creates updated images instantly.
- Increases creativity and saves time.

1.4 Objectives

• To develop an AI-based virtual companion capable of understanding user input and generating intelligent, context-aware responses.
• To implement advanced NLP, speech recognition, and text-to-speech models for smooth, natural, and human-like conversations.
• To create an easy-to-use interface that allows users to speak or type messages and receive smart, real-time replies.
• To enhance user interaction by adding conversational memory, emotional responses, and adaptive learning to make conversations more engaging and personalized.

2. LITERATURE SURVEY

A Literature Survey provides an overview of existing research, technologies and methods related to Artificial intelligence driven interior image redesign. It examines previous studies on deep learning, image to image generation, and diffusion models to identify current trends, gaps and advancement in automated interior styling. It helps in understanding the foundation and supporting the development of proposed Artificial intelligence based system.

Table -1: Literature Survey

Title	Authors	Methodology	Gap
Conversational Agent Using NLP	R. Sharma (2018)	Uses NLP techniques to process user text and generate rule based response	Responses were static and lacked emotional or contextual understanding.
Speech Enabeled virtual Assistant Using Deep Learning	K. Rao (2020)	Integrates speech-to-text and deep learning models for converting speech into commands.	System was command-based, not capable of free-flowing natural conversation.
AI-Driven Chatbot for Personalaized Interaction	Meera Gupta (2021)	Uses machine learning to personalize chatbot replies based on user history.	No real-time emotion simulation or virtual character interaction.
Virtual Talking Avatar System	D. Patel & A. Naik (2019)	Discusses animated avatars that mimic voice and facial expressions.	Focused on mimicry, not intelligent conversation or memory-based interaction.

This section highlights the gaps that drive the proposed AI powered virtual interior design system and provides an overview of sample work in each field.

3. SYSTEM REQUIREMENTS AND SPECIFICATION

The system requires basic user operations such as registration, login, authentication, message input (text or voice), intelligent response generation, data storage, and secure logout. It also demands a simple and user-friendly interface with fast response time, secure credential handling, modular and maintainable code, portability across operating systems supporting Python and Gradio, and scalability for adding future conversational or animation features.

The system is designed to run on Windows 10/11 using Python 3.7 or higher, with essential libraries such as Gradio, sqlite3, os, sys, SpeechRecognition, and transformers for NLP processing, and uses SQLite as the primary database, developed within Google Colab. It requires at least a dual-core processor, 4 GB RAM, around 1 GB of free storage space, and optionally a microphone for real-time voice input and a GPU to improve AI-based speech and text processing performance.

4. IMPLEMENTATION

The system is implemented using Python with Gradio for user interface and SQLite for data storage. Users upload room images, which are processed using AI models (torch and PIL) to generate design recommendations. The modular structure ensures easy integration of additional features and smooth execution across supported operating systems.

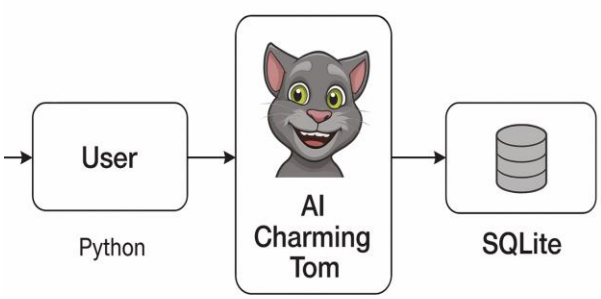

Fig – 1: System Design

5. RESULTS AND EVALUATION

The system successfully generated intelligent and context-aware responses based on user text and voice inputs, delivering accurate, meaningful, and natural interactions. User operations such as login, message input, voice processing, and response retrieval performed smoothly with fast processing times. Overall, the system delivered consistent and reliable conversational outputs across multiple test scenarios.

Performance evaluation showed that the system responded within seconds for all major operations, meeting the defined non-functional requirements. User testing indicated high satisfaction with interface simplicity, conversational clarity, and response quality. The system demonstrated strong stability, portability, and scalability during both functional and stress testing, ensuring a seamless and engaging virtual companion experience.

6. DISCUSSION

The developed system demonstrates that an AI-based virtual companion can significantly enhance user interaction by providing intelligent, context-aware conversations through automated speech/text processing and smart response generation. The results show that the system is easy to use, offers quick replies, and maintains stable performance across various test scenarios. Although the current model delivers meaningful and natural conversations, further enhancements—such as adding emotional animation, expanding conversational memory, improving NLP accuracy, and integrating more interactive features—can make the system even more engaging, adaptive, and user-centric

7. CONCLUSION

The project effectively demonstrates how automation and artificial intelligence can transform virtual interaction into a more intelligent and engaging experience. The system provides a modern approach to digital companionship by integrating Python, Gradio, NLP models, and speech-processing tools. The ease with which users can type or speak to the system makes the interaction seamless, natural, and enjoyable. Without the need for manual programming or predefined scripts, the system quickly analyzes user input and generates meaningful, context-aware replies that enhance conversation quality. Its user-friendly interface and stable performance make it suitable for everyday users who seek smart, real-time virtual assistance or entertainment. The automated conversational pipeline significantly improves interaction efficiency and reduces repetitive behavior found in traditional virtual pet applicationsOverall, the project meets its objectives of improving accessibility, reducing response time, and promoting innovation in conversational It provides a smart, adaptive, and intuitive platform that makes intelligent virtual companionship both practical and enjoyable for users.

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